



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,818	01/15/2002	Joichi Nishimura	P/1250-217	4742

2352 7590 10/17/2003

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
----------	--------------

1763

7

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/047,818

Applicant(s)

NISHIMURA ET AL.

Examiner

Karla Moore

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 17, 19-21 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,942,013 to Akimoto in view of U.S. Patent No. U.S. Patent No. 6,313,903 to Ogata.

3. Akimoto discloses an apparatus for processing a substrate substantially as claimed in Figures 2 and 3, comprising: a) an indexer portion comprising a downside structure (20) comprising a transfer robot (21) for transferring a substrate from/to a carrier (C) capable to hold a plurality of substrates, and an upside structure (30) defined above said downside structure and comprising upside processing sections (46, 42, 38, 34) of different types horizontally separated from each other and operable to apply processing to said substrate; and b) a processing portion comprising an arrangement of processing units (61, 62, 63) for applying a series of processing to said substrate transferred from said transfer robot, and a transport robot (51) for transporting said substrate between said arrangement of processing units. Additionally, Akimoto teaches locating processing chambers (an upside structure) above a transfer path for the purpose of obtaining a small floor area, which lessens the burden of the air conditioning facilities for the clean room (column 2, rows 7-12). Also, a plane area of said upside structure projected onto a

Art Unit: 1763

horizontal plane is included in a plane area of said downside structure projected onto a horizontal plane and said upside structure is provided in a location out of range in which said transfer robot moves for transferring substrate between said carrier and said processing portion. The downside structure comprises a carrier stage (10) on which a plurality of carriers each containing a plurality of substrates are aligned and said upside structure is provided over an alignment of said plurality of substrates.

4. However, Akimoto fails to disclose the upside structure comprising an inspection station operable to inspect said substrate. Nor does Akimoto teach an inspection portion in the upside structure comprising a complex inspection unit for measuring thickness of resist formed on said substrate, line width of lines formed on said substrate and for measuring superposition of circuit patterns formed on said substrate, and a macro defect inspection unit for detecting a macro defect on said substrate.

5. Ogata teaches locating an inspecting device to inspect a substrate on the top shelf of a plurality of units for the purpose of not using extra space, preventing the size of a coating and developing unit from becoming too large and effectively performing maintenance operations based on inspection results (Figure 4, 50; column 3, rows 47-50; column 8, rows 57-62).

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an inspection station in the upside structure in Akimoto in order to not use extra space, prevent the size of the coating and developing unit from becoming large and to effectively perform maintenance operations based on inspection results as taught by Ogata.

7. With respect to claims 19 and 23, the inspecting portion is a resist thickness measurement unit (column 3, rows 47-51) in order to monitor operations of the coating and developing unit and perform maintenance operations as needed.

8. With respect to claims 20 and 24, Ogata teaches using a number of inspecting units as claimed (column 4, rows 63 through column 5, row 25) for the purpose of separating acceptable substrates from

Art Unit: 1763

unacceptable substrates and transferring an acceptable substrate quickly to the next stage (column 3, rows 36-40).

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a number of inspecting units in the prior art in order to separate acceptable substrates from unacceptable substrates and to transfer an acceptable substrate quickly to the next stage as taught by Ogata

10. Claims 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto and Ogata as applied to claims 17, 19-21 and 23-24 above, and further in view of U.S. Patent No. 5,766,360 to Sato et al.

11. The Akimoto and Ogata disclose the invention substantially as claimed and as described above. Additionally, Akimoto further discloses the upside structure horizontally separated with each other across a gap space and a transport robot is operable to access each unit in the upside structure from said gap space.

12. However, the Akimoto and Ogata fail to teach the inspection unit comprising a plurality of inspection units.

13. Sato et al. teach preparing a plurality of inspection units in an inspection chamber for the purpose of improving the throughput of inspections (column 5, rows 1-3).

14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an inspection section comprising a plurality of inspection units Akimoto and Ogata in order to improve the throughput of inspections as taught by Sato et al.

15. Claims 25 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,942,013 to Akimoto in view of U.S. Patent No. 6,313,903 to Ogata, and in view of U.S. Patent No. 6,439,822 to Kimura et al.

16. Akimoto discloses an apparatus for processing a substrate substantially as claimed in Figures 2 and 3, comprising: a) an indexer portion comprising a downside structure (20) comprising a transfer robot

Art Unit: 1763

(21) for transferring a substrate from/to a carrier (C) capable to hold a plurality of substrates, and an upside structure (30) defined above said downside structure and comprising upside processing sections (46, 42, 38, 34) of different types horizontally separated from each other and operable to apply processing to said substrate; and b) a processing portion comprising an arrangement of processing units (61, 62, 63) for applying a series of processing to said substrate transferred from said transfer robot, and a transport robot (51) for transporting said substrate between said arrangement of processing units.

Additionally, Akimoto teaches locating processing chambers (an upside structure) above a transfer path for the purpose of obtaining a small floor area, which lessens the burden of the air conditioning facilities for the clean room (column 2, rows 7-12). Also, a plane area of said upside structure projected onto a horizontal plane is included in a plane area of said downside structure projected onto a horizontal plane and said upside structure is provided in a location out of range in which said transfer robot moves for transferring substrate between said carrier and said processing portion. The downside structure comprises a carrier stage (10) on which a plurality of carriers each containing a plurality of substrates are aligned and said upside structure is provided over an alignment of said plurality of substrates.

17. However, Akimoto fails to disclose the upside structure comprising an inspection station operable to inspect said substrate. Nor does Akimoto teach an inspection portion in the upside structure comprising a complex inspection unit for measuring thickness of resist formed on said substrate, line width of lines formed on said substrate and for measuring superposition of circuit patterns formed on said substrate, and a macro defect inspection unit for detecting a macro defect on said substrate.

18. Ogata teaches locating an inspecting device to inspect a substrate on the top shelf of a plurality of units for the purpose of not using extra space, preventing the size of a coating and developing unit from becoming too large and effectively performing maintenance operations based on inspection results (Figure 4, 50; column 3, rows 47-50; column 8, rows 57-62).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an inspection station in the upside structure in Akimoto in order to not use

Art Unit: 1763

extra space, prevent the size of the coating and developing unit from becoming large and to effectively perform maintenance operations based on inspection results as taught by Ogata.

20. Akimoto and Ogata disclose the invention substantially as claimed and as described above.

21. However, Akimoto and Ogata fail to teach a clean air outlet provided under said inspection station to supply clean air to said downside structure.

22. Kimura et al. teach the use of an air cleaning mechanism FFU that can be disposed above the carrier holding section for the purpose of keeping the wafers W held in the carrier holding section together with the substrate carrier clean or to control the temperature thereof by clean air flow (Figure 13; column 11, rows 49-54).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an air cleaning mechanism under the inspection station in Akimoto and Ogata in order to keep the wafers and the carriers holding them clean or to control the temperature of the wafers and carriers as taught by Kimura et al.

24. With respect to claim 27, the inspecting portion is a resist thickness measurement unit (column 3, rows 47-51) in order to monitor operations of the coating and developing unit and perform maintenance operations as needed.

25. With respect to claim 28, Ogata teaches using a number of inspecting units as claimed (column 4, rows 63 through column 5, row 25) for the purpose of separating acceptable substrates from unacceptable substrates and transferring an acceptable substrate quickly to the next stage (column 3, rows 36-40).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a number of inspecting units in the prior art in order to separate acceptable

Art Unit: 1763

substrates from unacceptable substrates and to transfer an acceptable substrate quickly to the next stage as taught by Ogata

27. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto, Ogata and Kimura et al. as applied to claims 25 and 27-28 above, and further in view of U.S. Patent No. 5,766,360 to Sato et al.

28. Akimoto, Ogata and Kimura et al. disclose the invention substantially as claimed and as described above. Akimoto further discloses the upside structure horizontally separated with each other across a gap space and a transport robot is operable to access each unit in the upside structure from said gap space.

29. However Akimoto, Ogata and Kimura et al. fail to teach the inspection unit comprising a plurality of inspection units.

30. Sato et al. teach preparing a plurality of inspection units in an inspection chamber for the purpose of improving the throughput of inspections (column 5, rows 1-3).

31. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an inspection section comprising a plurality of inspection units Akimoto, Ogata and Kimura et al. in order to improve the throughput of inspections as taught by Sato et al.

Response to Arguments

32. Applicant's arguments filed 8/11/03 have been fully considered but they are not persuasive.

33. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Akimoto is cited for teaching the structural relations of the upside and downside structures, not an inspection station. Ogata does in fact disclose an inspection portion (film thickness measuring portion, 50) that is located at a position above a downside structure comprising a transfer robot, see Figure 4. Sato is used in conjunction with Akimoto and Ogata. Examiner

Art Unit: 1763

does not submit that Sato teaches the upside structure and downside structural arrangement as claimed. Sato is relied upon for teaching a plurality of inspection stations only. With respect to Kimura, Examiner disagrees that if Kimura were combined with Ogata or Akimoto, the FFU would be provided above an inspection section underneath. The FFU in Kimura is provided above a substrate carrier (corresponding to the downside structure and transfer robot in the claimed invention) in order to keep the carrier clean. It would be obvious to one of ordinary skill in the art to provide the FFU in a position above ~~above~~ the downside structure/transfer robot and below the inspection station to obtain the benefits disclosed in Kimura.

Conclusion

34. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1763

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
15 October 2003

primary Examiner
AU 1763
P. Hassan Zadeh